

Director of Agriculture in Nyasaland to the corresponding directorship in the newly acquired Tanganyika Territory. His little book is a useful summary of practical information on cotton and tobacco growing in Nyasaland, and contains just those particulars which experience shows are required by would-be planters with little or no previous knowledge of these crops.

The greater part of the book is devoted to cotton, a crop of which Mr. McCall had much experience. Nyasaland long-staple cotton has gained a high reputation and finds a ready market. A controlling factor in production is transport, and on this point the author expresses the view that "the progress of cotton growing in Africa to-day depends more than ever on railways and mechanical transport. The cultivation of tobacco has become one of the most important planting industries of the Protectorate, and the leaf (Virginian type) is well known in this country. The information given regarding the growing and curing of this crop forms a useful first guide to a subject requiring careful study.

*A Popular Chemical Dictionary: A Compendious Encyclopaedia.* By C. T. Kingzett. Second edition. Pp. viii+539. (London: Baillière, Tindall and Cox, 1921.) 21s. net.

THE first edition of this useful book has been exhausted in less than one year, thus proving that it filled a vacancy in chemical literature. A careful perusal of the new edition shows that much new material has been added which enhances considerably the utility of the book. In particular the chief constants of most of the chemicals named have been added, and the work now forms a handy and popular book of reference embracing in one moderately sized volume a mass of up-to-date information on practically every branch of chemistry and allied sciences.

The information is imparted in a clear and interesting manner, freed so far as possible from technicalities. Consequently any one wishing to ascertain the meaning of a term or definition, or the nature of any material or subject in the scope of chemistry or mineralogy, will find without difficulty and within a few seconds the information required—information which is often difficult to lay hands on immediately when embedded in the pages of a large text-book.

G. M.

*The Adjustment and Testing of Telescope Objectives.* Third edition. Pp. 123+3 plates. (York and London: T. Cooke and Sons, Ltd., 1921.)

THIS volume is the third edition of a book first published in 1891. The favourable reception accorded to the earlier editions, and the extent of their circulation, have encouraged the publishers to re-issue the work with the amplifications necessary to bring it up to date.

The book deals with the simplest and most effective means of detecting flaws in telescope objectives, as well as the various maladjustments and imperfections of mounting, which may prevent an observer from obtaining the best results from his telescope. Different types of objective are treated separately, a special section being devoted to the Cooke triple photo-visual

objective. The points to which attention is given include squaring-on, achromatism, astigmatism, spherical and zonal aberration, mechanical strains, and other smaller, but equally important, matters. There is also a short chapter on the general treatment of objectives. The volume concludes with reprints of three papers by Mr. H. Dennis Taylor, originally presented to the Royal Astronomical Society, dealing with achromatism and the secondary colour aberrations of refractors.

The book is very clearly written, and should prove of great use, not only in detecting faults in imperfect objectives, but also in enabling an observer to determine whether defects in star images are due to the objective or to the manner of its setting. It should appeal especially to the amateur astronomer possessing a small refractor. The directions for testing and adjustment are of the simplest possible character, and involve keen observation rather than mechanical skill.

The publishers have done a great service to astronomy in producing such a useful little book.

*Bibliographia Agrogeologica: Essay of a Systematic Bibliography of Agro-Geology.* By Adolf Wulff. (Mededeelingen van de Landbouwhoogeschool en van de Daaraan Verbonden Instituten, Deel 20.) Pp. iv+285. (Wageningen: H. Veenman, 1921.) 4.50 florins.

THE study of the soil has developed so rapidly in recent years that no student can keep pace with the output of papers, nor can the best card index of an individual worker be relied upon as being complete. The necessity for such adventitious aid as is afforded by a bibliography has long become pressing, and this is now supplied by Dr. Adolf Wulff. No fewer than 3300 titles are given, the papers being drawn from more than 600 journals, and the list goes up to November 1, 1919. A satisfactory classification is adopted, so that the student will have no difficulty in finding his way through the bibliography even if he has to consult it only occasionally.

Although the title suggests to English ears only the geological or mineralogical side, the index covers the whole ground dealt with in this country by soil investigators, including soil organisms, soil organic matter, and the relations of soil to the growing plant. The English is remarkably free from errors, and the few misprints will cause no difficulty.

Prof. J. van Baren contributes an interesting discussion on soil problems, bringing together a considerable amount of work which is little known, and forming a useful introduction to the whole volume. Altogether the book is one which can safely be recommended to students and investigators in the subject.

E. J. R.

*Patents and Chemical Research.* By H. E. Potts. Pp. x+198. (Liverpool: University Press, 1921.) 8s. 6d. net.

A PATENT, like any other form of contract, depends very largely for its value upon the skill with which it has been drawn up. The form of wording, in fact, may be quite as important as the subject-matter.

Particularly is this so in the case of a patent for a chemical invention, where the scope of the monopoly must be defined in chemical terms and generally without reference to drawings. Clearly, then, it is to the advantage of the patentee to obtain the fullest legal co-operation in drafting the specification for a chemical invention.

Mr. Potts makes this his theme, and in the major portion of his book he develops it by laying down the principles upon which to construct a chemical patent that will procure maximum protection consistent with security against possible infringement or invalidation. His observations should be distinctly helpful both to the research worker in industrial chemistry and to the patent agent, though they tend perhaps to exaggerate a little the function of the latter. Whether, for instance, the patent expert would be capable of diagnosing chemical problems to the extent indicated in chap. 3 is rather open to doubt.

But there can be no question of the author's grasp of the fundamentals of patent law; the discrimination with which he has selected his leading cases when discussing the validity of patents demonstrates this. On the business aspect of patents, too, the author's views are well worthy of attention, especially as regards their value, individually and collectively, in commercial warfare. E. J.

*Astronomical Photography for Amateurs.* By H. H. Waters. Pp. iv + 93 + v plates. (London: Gall and Inglis, n.d.) 6s. net.

AMATEURS possessing small telescopes may, with the means at their disposal, secure good astronomical photographs, and the volume under notice is an elementary handbook intended to explain in a simple manner how good results may be achieved. The book does not go beyond this stage, so that none of the many uses to which astronomical photographs may be put are touched upon.

It is to be regretted that the amateur's share in photographic methods of observation should be regarded as being confined solely to obtaining pictorial records. But, even accepting this limitation, there is much that the amateur may do with telescopes of small aperture. As an instance of what can be accomplished with a small instrument in the hands of a skilled observer, it may be mentioned that many of Prof. Barnard's superb photographs of the Milky Way were secured with a small lens of less than 2-in. aperture. To amateurs desirous of attempting something in this direction, but hesitating through lack of experience and for want of a guide, this book can be recommended. It is written by one who has had some success in this field, and is full of practical hints and directions as to the methods of working, the type of camera necessary, and the exposures and apertures most suitable for photographing various objects. This is just the sort of book which a beginner requires. It includes five plates with reproductions of astronomical photographs obtained by the author. These are printed on a paper of poor quality, with the result that they are practically useless as indications to the beginner of the results which he should be able to obtain. H. S. J.

*Philosophy and the New Physics: An Essay on the Relativity Theory and the Theory of Quanta.* By Prof. L. Rougier. Authorised translation from the author's corrected text of "La Matérialisation de l'Energie" by Prof. M. Masius. Pp. vi + 159. (Philadelphia: P. Blakiston's Son and Co., 1921.)

*La Matière et l'Energie: Selon la Théorie de la Relativité et la Théorie des Quanta.* Par Prof. L. Rougier. Nouvelle édition, revue et augmentée. Pp. xii + 112. (Paris: Gauthier-Villars et Cie, 1921.) 9.50 francs.

THE French title is a better indication than the English of the contents of this little book. The only philosophical question discussed at any length is that of the relation between matter and energy, regarded as an extreme example of the fundamental problem of a substance and its properties. By far the greater part of the space is devoted to a simple exposition of the theory of relativity and the quantum theory, which is as well suited for those whose interests are primarily scientific as for philosophers. The exposition is quite adequate, but it is not superior to all others of the same scope. The author has not solved the insoluble problem of giving a true account of mathematical theories without assuming familiarity with the mathematical ideas from which they derive their value and meaning; but he has succeeded in avoiding the distortion of meaning that is frequently a result of such attempts. We can recommend the book to any one with philosophical inclinations who wants to make one more attempt to "understand Einstein," but we are not sure that it was worth translation. However, the translator has done his work, except in the title, with unusual competence.

*Personal Beauty and Racial Betterment.* By Prof. Knight Dunlap. Pp. 95. (London: Henry Kimp-ton, 1920.) 6s. net.

PROF. DUNLAP's essay on racial betterment consists of two parts. In the first he analyses the elements which go to make up the ideal of personal beauty as a basis of sexual selection; in the second he deals with its conservation as a means to the improvement of the race. Personal beauty, he maintains, on the negative side is the absence of deformity and of deviation from the accepted type towards that of an inferior race, while on the positive side it is the sign and expression of the *potentiality* of the individual, not in his own interests, but in the interests of the species. Prof. Dunlap meets possible objections that his view of the factors making for racial betterment is entirely physical by maintaining that that is the primary ideal essential for "the attainment of ultimate ideals." This is somewhat vague, but apparently he means that mental and moral qualities may be neglected in sexual selection without detriment—a somewhat large assumption. He discusses the question of the unfit and the desirability in their case of sterilisation, as well as the various causes operative in checking the fertility of those who are best fitted to perpetuate the race. Though he maintains that some fundamental reform is necessary and cannot long be delayed, he himself has no practical programme to propose.